

CLAIMS

What is claimed is:

1. A tip for use in a plasma arc torch comprising:

an electrically conductive body;

a central exit orifice formed through the electrically conductive body;

a plurality of swirl holes; and

a plurality of secondary gas holes,

wherein the swirl holes direct a plasma gas to generate the plasma stream, the central exit orifice provides for the exit of the plasma stream, and the secondary gas holes direct a secondary gas to stabilize the plasma stream exiting the exit orifice.

2. A tip for use in a plasma arc torch comprising:

an electrically conductive body;

a central exit orifice formed through the electrically conductive body;

and

at least one swirl passage, wherein the swirl passage directs a plasma gas to generate a plasma stream.

3. A tip for use in a plasma arc torch comprising:

an electrically conductive body;

a central exit orifice formed through the electrically conductive body;

and

at least one swirl hole, wherein the swirl hole directs a plasma gas to generate a plasma stream.

4. A tip for use in a plasma arc torch comprising:
 - an electrically conductive body;
 - a central exit orifice formed through the electrically conductive body;
 - an annular flange formed around the electrically conductive body;
 - a distal face formed on the annular flange; and
 - at least one secondary gas passage formed on the distal face,
wherein the secondary gas passage directs a secondary gas to stabilize a plasma stream that exits the tip.
5. An improved tip of the type which is used in a plasma arc torch to generate a pilot arc and provide for the exit of a plasma stream from a central exit orifice, wherein the improvement comprises:
at least one swirl hole formed in the tip to direct a plasma gas that generates the plasma stream.
6. An improved tip of the type which is used in a plasma arc torch to generate a pilot arc and provide for the exit of a plasma stream from a central exit orifice, wherein the improvement comprises:
at least one secondary gas hole formed in the tip to direct a secondary gas that stabilizes the plasma stream.